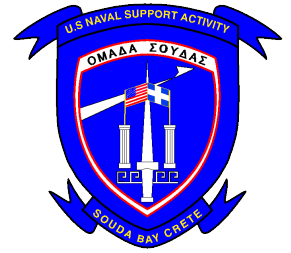
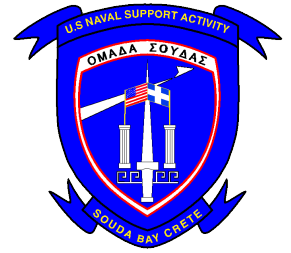


# "Souda Team 21"



RESPONSIBLE  
ALCOHOL CONSUMPTION  
MUST BE  
A  
LEARNED BEHAVIORIAL  
LIFE SKILL

# Sailor's Creed



I am a United States Sailor.

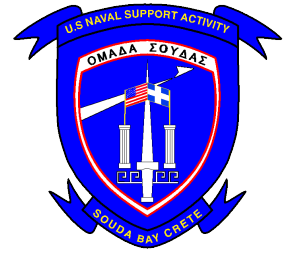
I will support and defend the Constitution of the United States of America, and I will obey the orders of those appointed over me.

I represent the fighting spirit of the Navy and those who have gone before me to defend freedom and democracy around the world.

I proudly serve my country's Navy combat team with Honor, Courage, and Commitment.

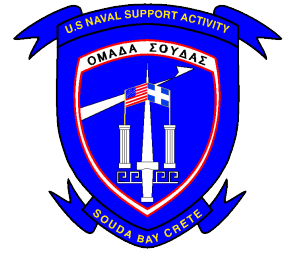
I am committed to excellence and the fair treatment of all.

# "Souda Team 21"



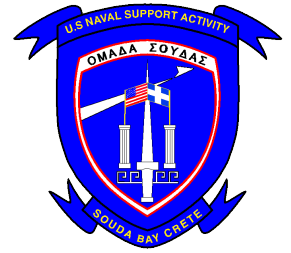
RESPONSIBLE  
ALCOHOL CONSUMPTION  
MUST BE  
A  
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LIFE SKILL

# “Souda Team 21”



Attendance of this course is mandatory for all U.S. military personnel under the age of 21, who are permanently assigned aboard NSA Souda Bay.

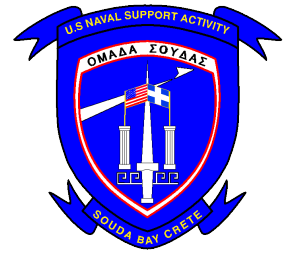
# Course Overview



## ❑ Course Composition:

- Eight hours of classroom instruction, presented in four two hour sessions called Learning Modules.
- Each week, a Learning Module is presented and facilitated by Chief Petty Officers.
- Learning Modules will be held on Wednesday evening from 1800 – 2000.
- Four NKO personal development classes are also critical required components of this course.

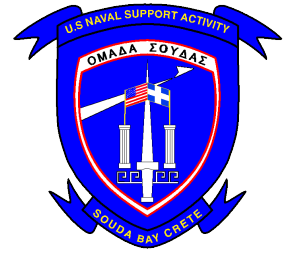
# Course Overview



## ❑ Course Completion Requirements:

- Each student must abstain from any alcohol consumption from the moment they arrive in Souda Bay, until course graduation.
- Each student must complete Check-In Sheet to its entirety.
- Each student must complete Command Indoc. Course.
- Each student must successfully complete all four Learning Modules through attendance, and active participation.
- Each student must successfully complete all

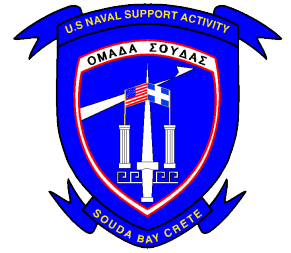
# Course Outline



## LEARNING MODULES:

1. Collateral Damage: The negative impact that irresponsible alcohol consumption (abuse) can have on; career, life, parents, spouse, children, shipmates, the unit, the navy, and your country.
2. Ask the Doc?: The “TRUTH” about the human physiological damage/harm; both short & long term alcohol abuse can cause.

# Course Outline

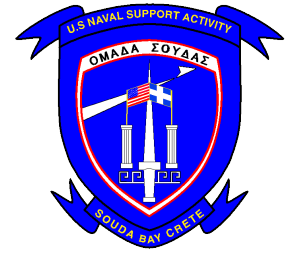


## LEARNING MODULES

3. What's my limit?: The “TRUTHS” about the mental and physical impairments of alcohol consumption. Blood Alcohol Content(BAC) level determination, the science of the “Breath-Analyzer. Motor skills aren't the only things lowered when drinking, discover the unforeseen harm of lowering one's inhibitions. Are you a Overseas Liberty Risk?
4. Sudden Impact!: How much can an ARI and/or a DUI cost you? What's your life or career worth? What does it cost the Division, Department, the Command, and the strategy of our host nation relations.



# Course Outline



## REQUIRED NKO COURSES

- ✓ Drug and Alcohol Abuse (CPD-GMT05-012)
  - ✓ Details for: Success over Stress (PD0182)
  - ✓ Basic Personal Finance (15043)
  - ✓ Stress Management: Fundamentals for Employees (4
- Bring “COPY” of Completion Verifications to Class

# Alcohol In The Body



- OBJECTIVES

- Understand the ORM Process and how it can be applied to your liberty plan.
- Define alcohol and it's properties
- Describe the effects of alcohol in the body
- Explain absorption and elimination of alcohol in the body
- Discuss the significance of blood and breath alcohol concentrations

# ORM



## Operational Risk Management

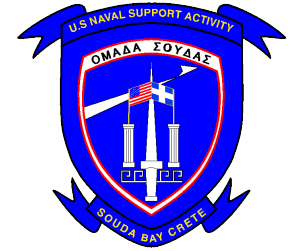
- Four Principles of ORM
  - ✓ Accept risk when benefits outweigh the c
  - ✓ Accept no unnecessary risks.
  - ✓ Anticipate and manage risk by planning.
  - ✓ Make risk decisions at the right level.

# ORM



## Operational Risk Management

- Five Step Process
  - ✓ Identify Hazards
  - ✓ Assess Hazards
  - ✓ Make Risk Decisions
  - ✓ Implement Controls
  - ✓ Supervise (watch for changes)



## **Probability**

- A- Likely to occur immediately or within a short period of time
- B - Probably will occur in time.
- C - May occur in time.
- D - Unlikely to occur.


## **Severity**

- I - May cause death, loss of facility/asset.
- II - May cause severe injury.
- III - May cause minor injury, illness, property damage.
- IV - Minimal threat.

**RISK MATRIX**

# Probability

**Severity**

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>I</b>	1	1	2	3
<b>II</b>	1	2	3	4
<b>III</b>	2	3	4	5
<b>IV</b>	3	4	5	5

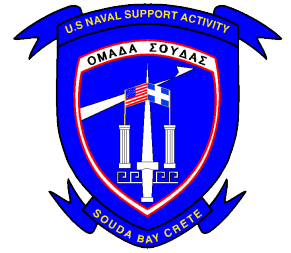
# Risk Assessment Codes (RAC)

---



- 1 = Critical
- 2 = Serious
- 3 = Moderate
- 4 = Minor
- 5 = Negligible

# What is Alcohol?



- THREE COMMON TYPES
  - Ethyl (beverage)
  - Methyl (industrial)
  - Isopropyl (antiseptic)
- Alcohol is a colorless, odorless liquid.
- Must be mixed with something to produce



# Ethyl Alcohol-Ethanol-Grain Alcohol



- Produced by fermentation of starch from grain or sugar from fruits by enzymes in yeast

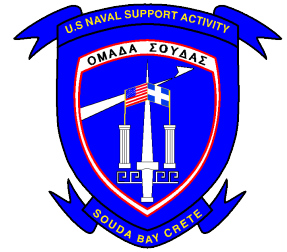
- Alcoholic drinks contain Ethyl Alcohol

- Natural - Primary - fermentation can give up to 12% alcohol by volume

- Fortification - by adding sugar can increase concentration up to 20% by volume

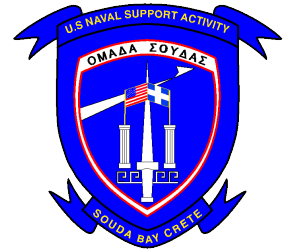
- Distillation - can increase concentration up to 100%

# Methyl Alcohol-Methanol-Wood Alcohol



- Produced by distillation of wood
  - Used in cleaning solvents, antifreeze, sterno heating fuel
  - Toxic Affects - damage to optic nerve, blindness, by production of formaldehyde and formic acid - Death after one minute.
  - Treatment is Ethanol - Poisoning is from a by product of methanol - formaldehyde - the enzymes that break down alcohol prefer Ethanol, so methanol is eliminated by other means

# Isopropyl Alcohol-Isopropanol-Rubbing Alcohol



- Produced by direct hydration of propylene
  - Used as rubbing alcohol and for surface disinfection
  - Can appear in alcoholic drinks due to fermentation caused by bacteria
  - Use by Alcoholics when ethanol is not available – cheap and easy to obtain
  - Toxic – twice as toxic as ethanol, but less toxic than methanol, metabolized into acetone – causes nausea, headache, dizziness, and coma

# What is (Ethyl) Alcohol?



- Medically

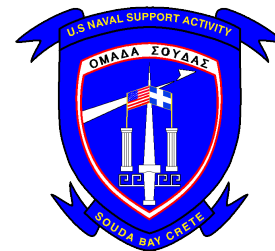
- Alcohol is a Depressant Drug
- Acts as a depressant/numbing agent, slowing the activity of the brain and

- ~~Other nerve tissue~~ **Poison / Intoxicant**

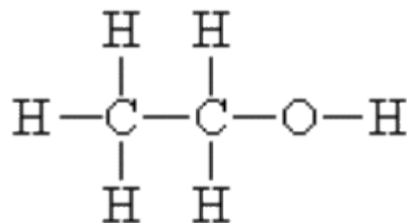
- Impairs judgment & muscular coordination
- Unconsciousness
- Death

- The degree of impairment relates to the concentration of alcohol in the blood

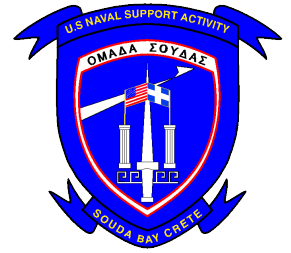
# Ethyl Alcohol - the chemical



- The molecular structure of Ethyl Alcohol is comprised of Carbon, Hydrogen, and Oxygen: **C<sub>2</sub>H<sub>5</sub>OH**
- The molecular structure of Ethyl is:



# Ethyl Alcohol



- Liquid
- Evaporates easily, volatile
- Odorless
- Soluble in water
- Burns - turns into heat energy
- Is a food
- Is a drug - depressant
- Is a poison

# Absorption of Alcohol in the Body



- Small amounts of alcohol are absorbed through the stomach walls into the bloodstream
- Some alcohol is broken down in the stomach
- Rapid absorption into the bloodstream occurs in the small or upper intestine
- Absorption is slowed when there is food in the stomach

# Distribution of Alcohol in the body



- Alcohol is water soluble and the bloodstream rapidly transports the ethanol throughout the body where it is absorbed into the body tissues in proportion to their water content.
- Alcohol is distributed to all parts of the body where it is stored in aqueous cells until most of it is returned by the blood to the liver where it is oxidized.
- The remaining alcohol is removed from the body in the form of urine, sweat, and breath



# Elimination of Alcohol from the Body



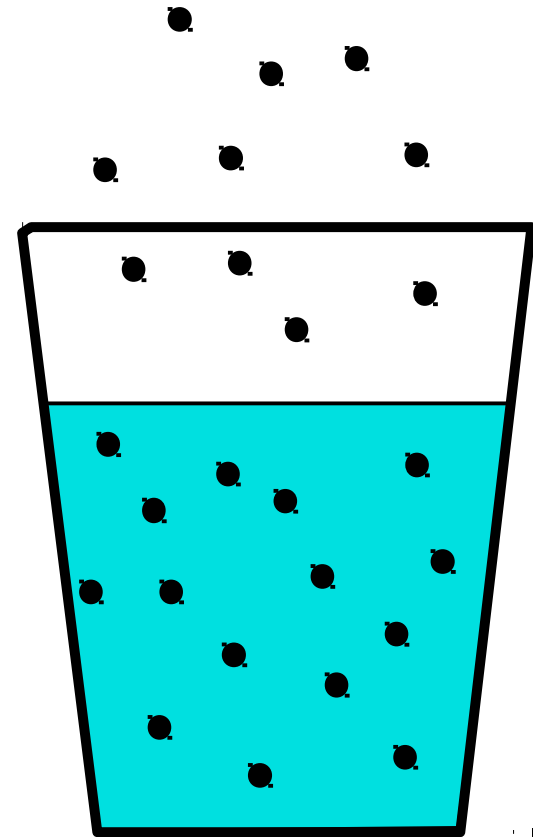
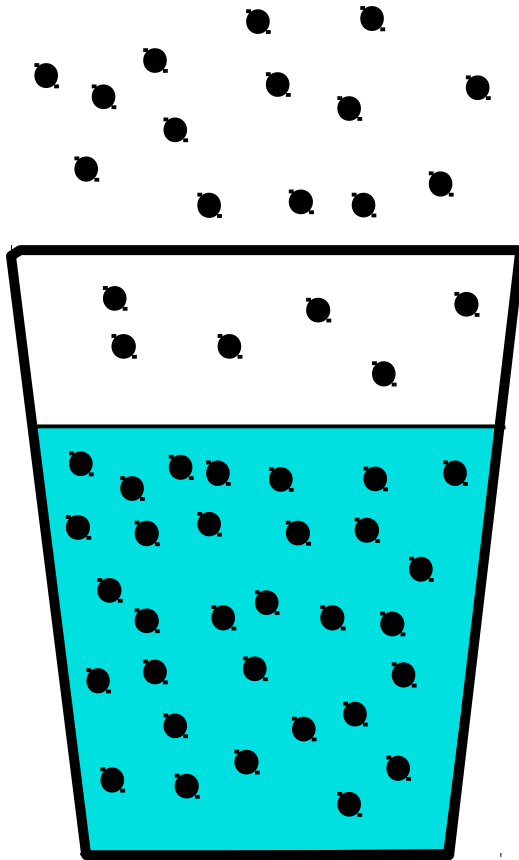
- The liver oxidizes 80% of the alcohol introduced into the bloodstream
- The rest via sweat, urine, and breath
- Alcohol is a volatile (evaporates easily)
- Blood vessels in the lungs terminate in networks of capillaries in the walls of the alveoli
- Alcohol is transferred from the blood into the breath
- Alveolar breath contains  $1/2100^{\text{th}}$  as much alcohol as there is in the blood

# Scientific Validity of Breath Testing

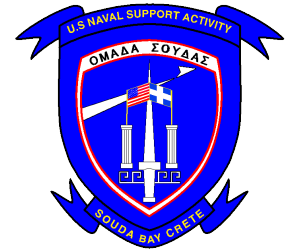


- ❖ Henry's Law establishes a definite ratio between the amount of a volatile in a liquid solution and the concentration of that volatile in the vapors over the solution
- ❖ Alcohol is a volatile, therefore Henry's Law can be applied to the relationship between the amount of alcohol in the blood and the amount of alcohol in the deep lung breath

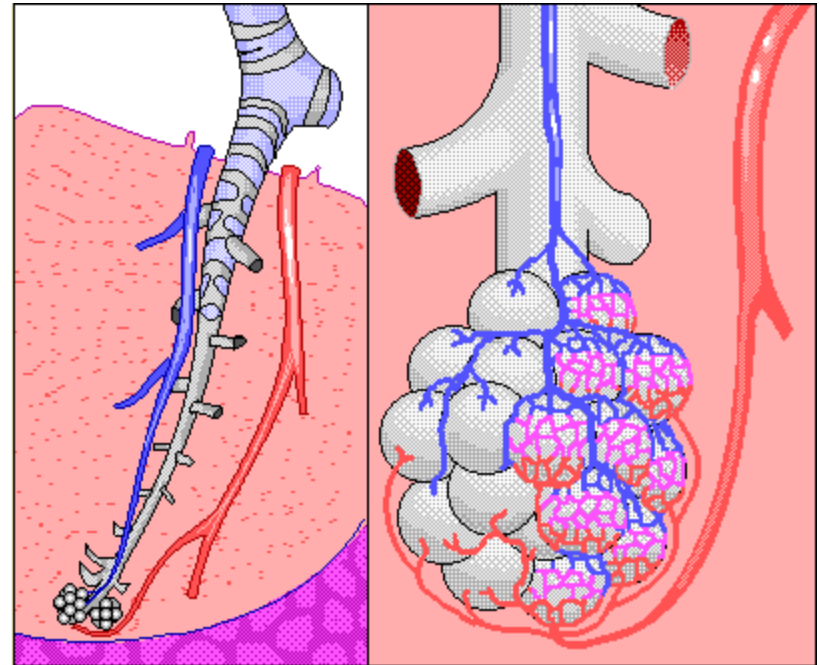
# Henry's Law



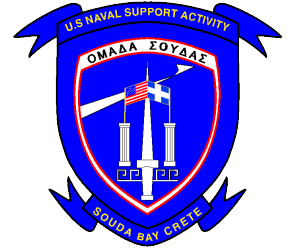
# How does Alcohol get from the blood to the breath?



- In the human body, the liquid solution is blood, the vapor is deep lung breath, and the volatile is alcohol
- The established ratio between alcohol in the blood and alcohol in the breath is 2100:1
- The alcohol concentration in one cubic centimeter of blood is 2100 times greater than the alcohol concentration in one cubic centimeter of deep



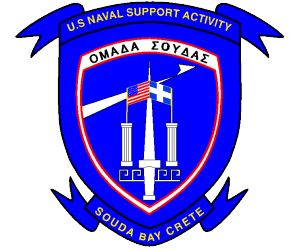
# Alcoholic Beverages



## DEFINITION OF ONE (1) DRINK

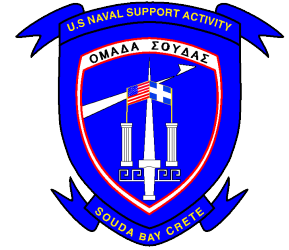
- 12 oz BEER
- 6 oz WINE
- 1.5 oz 80 PROOF LIQUOR

# Alcohol levels vs Body Weight



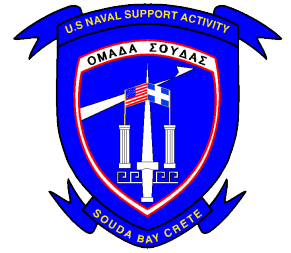
	AVERAGE TO LARGE PERSON (170 LBS)	PETITE TO SMALL PERSON (125 LBS)
(1) DRINK IN (1) HOUR	.015 BAC* *Blood Alcohol Concentration	.025 BAC* *Blood Alcohol Concentration
<b>A small person has less body fluid and therefore will have a higher concentration of alcohol in their body if they drink the same amount as a larger person.</b>		
(3) DRINKS IN (1) HOUR	.040 BAC	.075 BAC
(7) DRINKS IN (1) HOUR	.100 BAC	.175 BAC
<b>Average person eliminates about (1) drink's worth of alcohol per hour</b> <b>To maintain above readings, drinker must continue to have (1) drink per hour</b>		

# Blood Alcohol Concentration



.50	DEATH
.40	COMA
.25	HIGH LEVEL OF IMPAIRMENT (POSSIBLE MEDICAL ATTENTION)
.16	AVERAGE DUI ARREST (U.S.A.)
.10	DRIVING WHILE IMPAIRED IN U.S. AND UNDER THE UCMJ
.08	IMPAIRED DRIVER IN MOST U.S. STATES
.05	IMPAIRMENT IN GREECE AND FEDERAL INSTALATIONS
.04	AMERICAN MEDICAL ASSOCIATION DETERMINED ALL PEOPLE ARE IMPAIRED. VIOLATION LEVEL FOR U.S. DEPT OF TRANSPORTATION
.02	IMPAIRMENT IN U.S. DOT, SWEDEN, JAPAN
.00	NO SIGNIFICANT ALCOHOL IN BODY

# Science of A Breathalyzer



- The Breathalyzer contains a fuel cell sensor and an electrically operated piston sampling pump.
- The fuel cell is a porous disk coated with a thin layer of platinum black on both faces and saturated with an electrolyte
- A small, fixed volume of deep lung breath is drawn on to the upper surface of the fuel cell
- Any alcohol is subsequently converted to acetic acid and electrons are released
- A signal is generated on the fuel cell as a result of the oxidation of any alcohol from the breath sample

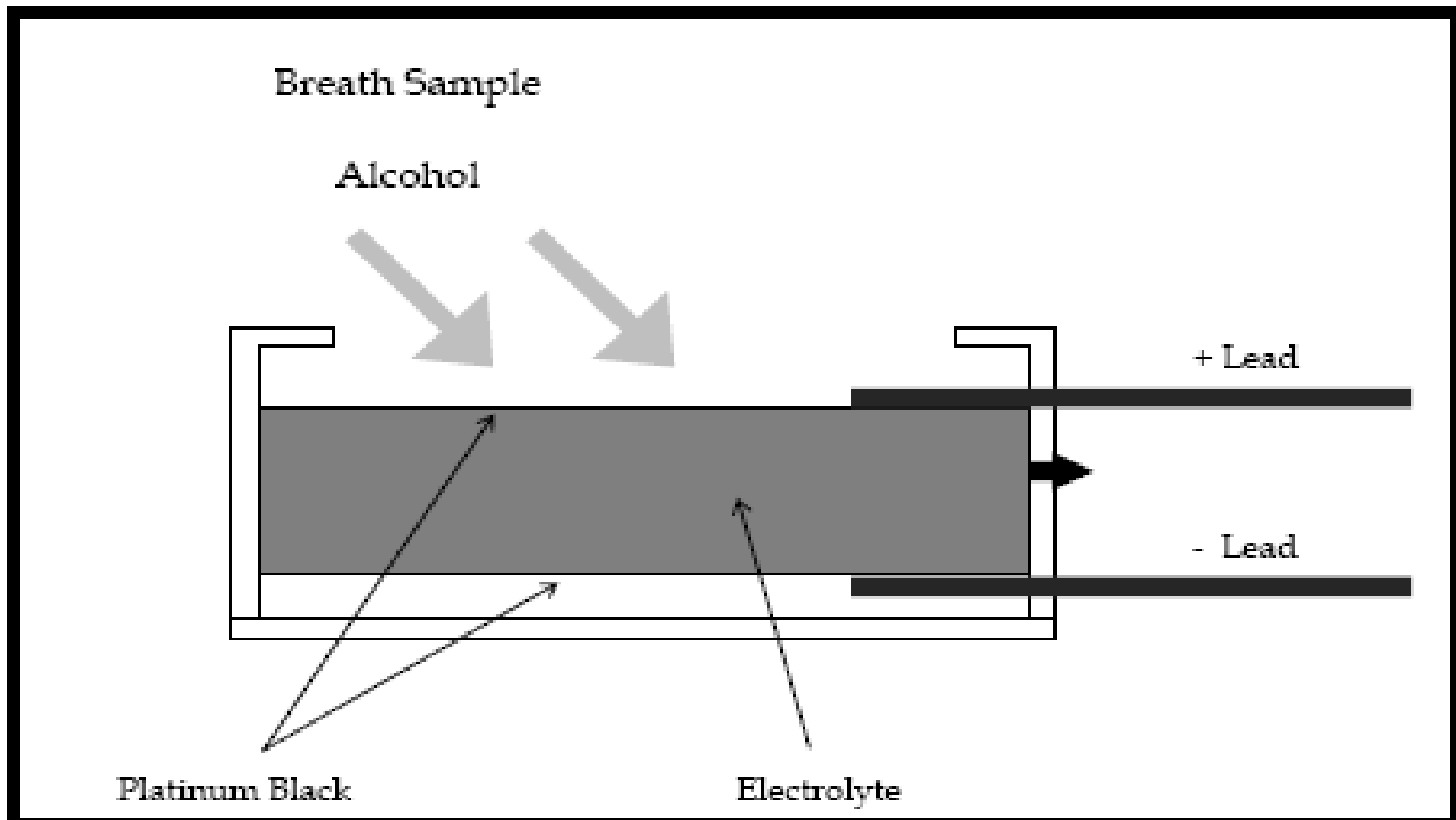
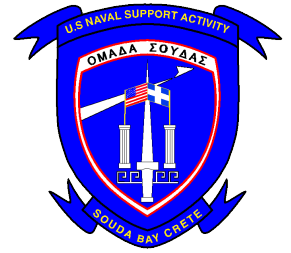


# Science of A Breathalyzer

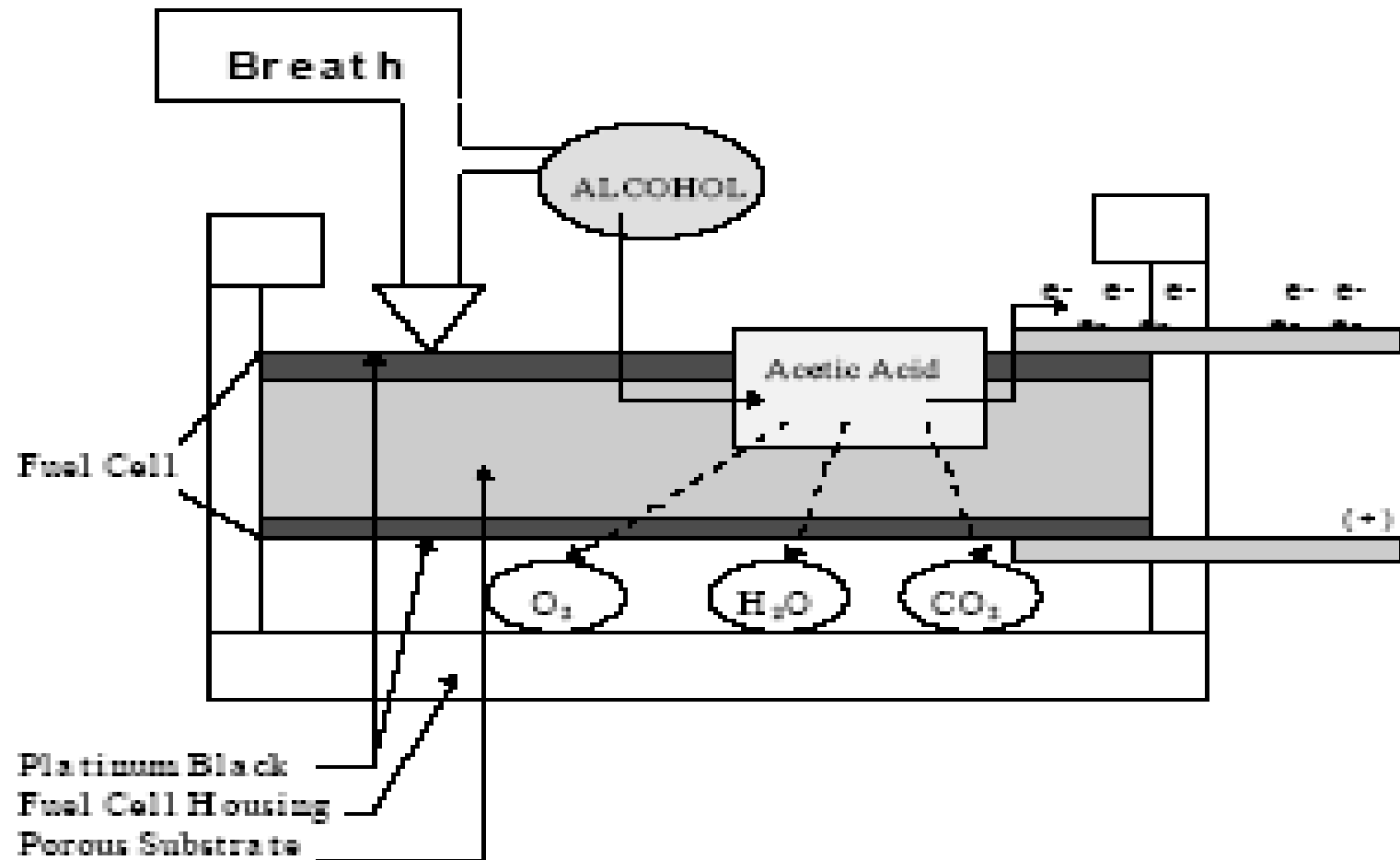
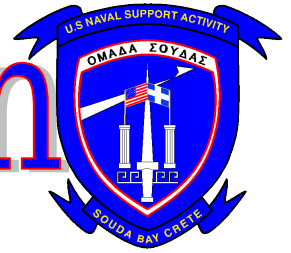


- The resulting electric current is translated into a Blood Alcohol Content (BAC) and digitally displayed
- If there is no alcohol present in the breath, no oxidation will occur, no electric current will be generated and a reading of 0.000 will be displayed
- The fuel cell responds to alcohol in the breath
- It will not respond to acetone which may be found in the breath of a diabetic, dieter, or highly exercised individual
- It has no significant cross sensitivity to any known substance that might be found in a living human subject after a 15 minute deprivation period

# Fuel Cell Diagram



# Fuel Cell Operation



# Questions?

